Incorporating higher learning skills into bioethics education of multicultural students of science in Malaysia

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Abstract

An overview of bioethics courses offered to pure science undergraduates from the University of Malaya is presented. Students come from three ethnic groups affiliated with three major religions with diverse values and belief systems. It was therefore important to incorporate a bioethics curriculum where the youths could identify with and relate to their intrinsic beliefs and moral discernment. For example, the concept of non-violence is an important ethical rule for the Hindus and Buddhists affecting their stand related to embryonic stem cell research. Likewise the concept of charity in Islam and Christianity would be important virtues to consider in regards to organ transplant issues. Two overriding concerns when designing the bioethics curriculum are therefore discussed in this paper: (1) the rationale for a course structure that accommodates varying ethical values on issues of scientific research and innovation, and (2) a suitable course design should incorporate and induce critical thinking and problem-solving skills. Positive feedback was received from students through a course evaluation survey and most students reported having fun while tackling ethical problems collectively in a peer group.

Introduction

This paper discusses the introduction of a set of courses on ethics for science students based on grounded theories in bioethics applied with epistemological foundation. There were two overriding concerns when designing the ethics curriculum for science undergraduates of the University of Malaya, (1) the rationale for a course structure that accommodates varying ethical values on issues arising from scientific research and innovation, and (2) the deployment of a suitable course design which would incorporate and induce critical thinking and problem-solving skills.

Methodology

A conceptual approach is taken following the framework set out by two thematic objectives to guide the development of the courses – the ethical and the educational. The objectives shared in this paper unfold the development of bioethics teaching for science undergraduates. Bioethics instruction was first introduced in 2001 and incorporated three courses: *Professional Ethics and Morals, Ethics of Knowledge and the Profession* and *Issues in Bioethics*. The curriculum content was achieved through the diffusion of Western bioethics in religious ethics. While content on Western ethics is delivered through lectures based on notable resources in bioethics, religious content is independently derived by the students themselves through problem-based learning sessions.

The Ethical approach: Bioethics as a discipline has without doubt its own merits. It represents a useful didactic tool that would make science students start thinking responsibly of the importance of science as in the phrase 'Science for Better Living'. Learning science is about processing facts, theories, making assumptions, deriving and making inferences. While science education may enhance the socio-economic status of a nation, for instance by provision of innovative solutions to problems of food and energy resources, the practice of science and the prioritization of particular disciplines of science must be aligned to national policy directions, and also be responsive to safety and ethical considerations.

Students must be aware that individual researchers, science societies, and industries involved in big science collaborations do occasionally become tangled with incidents of scientific misconduct. Science may seem self-correcting with its rigorous methodology and peer review systems, however there is a need to be 'proactive' rather than 'reactive' (Kim & Park 2013) and to attempt to combat scientific fraud may be a little too late. It is with this realization ethics courses were decided to be taught as stand-alone courses and not 'inserted' or 'embedded into technical science courses as has been done elsewhere (Davis, 2006).

It is only through a formal course on ethics in science that students are compelled to think of science as having direct implications to the society. Such thinking guarantees responsible behavior as they go about conducting experiments or investigating an animal or plant specimen in their laboratories. Hence, bioethics is 'a study of ethical issues and decision-making associated with the use of living organisms' which involves the learning of 'how to balance different benefits, risks and duties' (Macer, 2008). Bioethics thus seems to be the best tool of instruction of ethics education for future scientists, as a valuable tool to enhance critical decision-making skills for students with diverse beliefs and value-systems (Nor, 2009).

Hence, the learning outcomes expected of the student include: To understand some ethical theories and methods in problem-solving; to develop analytical skills when deliberating selected problems in bioethics; and to acquire an awareness of cross-cultural differences in value assumption.

The Educational approach: Problem-based learning (PBL) is adopted as a useful way to develop critical thinking (Card, 2002). PBL provides independent learning opportunities for students, and important skills such as team-work learning skills and managerial skills are enhanced. Students are given problem-based cases right from the start of their first class. Two hour lectures are given over a 12 week period each followed by a one hour PBL class. In week-13 the students are required to present their selected case in a class seminar.

The challenge in developing the ethics curriculum, however, lies in projecting a suitable teaching module on bioethics. How a subject must be delivered based on a discipline of study which is predominantly Western in origin but yet is appealing for a diverse and multicultural group of students? The majority of students are Malay-Muslims, followed by Chinese (who may be Taoist, Buddhist or Confucian), and Indians who are either Hindus or Sikhs. Some Chinese and Indians may also be Christians by conviction.

Perhaps, the quickest way to initiate science students to think about ethical ways of engaging in scientific research is to discuss the meaning of ethics by throwing in three questions as follows:

- What is the right or good thing to do for my society?
- What are my obligations (or duties) to the society?
- What rules or guidelines must I follow to protect and safeguard the society?

To facilitate intense thinking, students are given a set of case studies on bioethical dilemmas. The use of case studies in teaching instructions has been found effective in developing ethical analysis skills (Denni 1995, Coughlin 2008). In a multi-cultural setting, moral deliberations arising from stem cell research or organ transplant technology, for example, is expected to be assessed differently by a Muslim or a Buddhist or a Hindu. The concept of non-violence is an important ethical rule for the Hindus and Buddhists affecting their stand related to embryonic stem cell research. Likewise altruism and the concept of charity in Islam and Christianity would be important virtues to consider in response to organ transplant issues.

Discussion

Students are trained to observe the rule not to express 'gut feelings' (Loike et al. 2013) in their contemplation of the problem but rather to reflect on their own religious beliefs. Here, the novice student would tend to look within him or herself and their value-systems with a given set of teachings as the yardstick from which judgment on an ethical problem may be deliberated and conveyed. However, students are instead instructed to refer, read and cite previous scholarly literature to assist moral reasoning of the given problem. This literacy intervention supports students to develop skills in information retrieval.

Often the students will find an overwhelming amount of literature on religious perspectives of bioethics issues. There are vast number of resources on Islamic bioethics, Buddhist ethics, and Hindu ethics (Aksoy 2005, Nor 2010, Fadel 2012, Trivedi 1990). It is here that the students would have to independently manage and organize these resources and then select and decide the ones most relevant for their learning needs. Because students are made to work in teams, such a situation would propel each student to engage in discussions to argue and defend their choice of religious principles or values from a vast number of resources that best fits the given problem. It is during these collaborative learning sessions that students develop new skills in communication, clear expression and critical thinking skills. Such learning process also provides opportunities and space that help to elevate a student's leadership and managerial skills.

Last and not least, an introductory course on the history and origins in bioethics is presented followed by theories and principles of Western philosophy of ethics, before a student can begin to say *"The right thing to do is firstly, to respect a person's autonomy, secondly, to act with beneficence and finally, ensure justice"*.

Bioethics is an interventional learning instrument that is valuable in developing important skills in undergraduate science students. Bioethics instruction as currently practiced in the University of Malaya has been given as a skills-based approach. First of all, the objective of the bioethics course is met when at the end of the course, students report improved attitude and awareness of concerns affecting science researchers. Important ethics knowledge content is also gained such as the scientist duty to respect the autonomy of research participants, maximize benefits and minimize risks.

In addition, just as science learning involves problem-solving and critical thinking skills, the same is applied to learning bioethics with the exception that the use of cases in bioethics dilemma pushes students to not only develop basic information retrieval abilities, it instills in an indirect way an awareness of ethical values not only found from one system of ethics (the western) but a variety of intrinsic and local religious beliefs that are useful for their learning needs. Consequently, students from multi-ethnic and multi-faiths groups begin to learn and understand more about other value-systems and this has emerged from an innovative bioethics lesson plan which has essentially stimulated such awareness through a collaborative learning experience.

Finally, a course evaluation survey conducted at the end of the course reported that students had fun learning bioethics, and no student reported that the class was boring. Students enjoy being 'in charge', having 'decision-making power' and share native notions of what is 'good', 'right', 'responsible' and what is 'bad', 'wrong' and 'forbidden' with their fellow classmates.

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